

What is claimed is:

1. A traveling yarn tension compensating system comprising a pair of generally horizontally spaced yarn guiding devices for guiding yarn for travel therebetween, and a yarn tension compensating device disposed between said yarn guiding devices for engaging the yarn traveling between said yarn guiding devices and having a yarn engaging surface that applies frictional restraint to the traveling yarn, said yarn engaging device being responsive to variations in tension in the yarn traveling from one guiding device to the other to increase or decrease the tension applied to the yarn.

2. The traveling yarn tension compensating system according to claim 1 characterized further in that said yarn engaging surface is convex with the extent of yarn engagement by the convex surface decreasing in response to an increase in tension of the yarn traveling from said one guiding device.

3. The traveling yarn tension compensating system of claim 2 characterized further in that said yarn tension compensating device includes an element resting on the traveling yarn and deflecting the yarn downwardly between said guiding devices, said element being movable with a vertical component of movement in response to tension in the yarn from a lower position at which the extent of engagement of the yarn by the yarn guides and the yarn engaging surface is greater and upper positions at which the extent of engagement of the yarn by the yarn guides and the yarn engaging surface is less.

4. The traveling yarn tension compensating system according to claim 3 characterized further in that said yarn engaging surface is formed on said movable element and is downwardly convex.

5. The traveling yarn tension compensating system of claim 1 characterized further in that said yarn engaging surface is restrained so that it is not free to move at the same surface speed as the traveling yarn.

6. The traveling yarn tension compensating system of claim 4 characterized further in that said yarn engaging surface is restrained so that it is not free to move at the same surface speed as the traveling yarn.

7. The traveling yarn tension compensating system according to claim 5 characterized further in that said yarn engaging surface is fixed against movement in the direction of yarn travel.

8. The traveling yarn tension compensating system according to claim 6 characterized further in that said moveable element is fixed against movement in the direction of yarn travel.

9. The traveling yarn tension compensating system according to claim 3 characterized further in that said element is freely movable in a substantially vertical direction in response to tension in the traveling yarn.

10. The traveling yarn tension compensating system of claim 9 characterized further in that said movable element is in the form of a movable slide and a generally vertically extending slide guide engages the slide element to guide it in substantially vertical movement.

11. The traveling yarn tension compensating system of claim 10 characterized further in that said slide guide has a slot and said movable slide element has a follower portion engaged in said slot.

12. The traveling yarn tension compensating system of claim 1 characterized further in that said convex surface is formed as the base of a groove.

13. The traveling yarn tension compensating system according to claim 9 characterized further in that said movable element is movable upwardly at an inclination to the vertical in a direction inclined toward the yarn guiding device to which the yarn travels.

14. The traveling yarn tension compensating system according to claim 10 characterized further in that said slide guide is inclined from the vertical toward the direction in which the yarn travels.

15. The traveling yarn tension compensating system according to claim 1 characterized further in that said yarn guiding devices are vertically disposed ball-type yarn tensioning units having upper yarn guides, said units being arranged for yarn to travel upwardly through one of said units over its upper yarn guide, past said yarn tension compensating device, over the upper yarn guide of the other unit, and down through the other unit.

16. The traveling yarn tension compensating system according to claim 1 characterized further by a frame on which the yarn guiding devices and the yarn tension compensating device are mounted.

17. The traveling yarn tension compensating system according to claim 15 characterized further by a frame on which said ball-type tensioning units and said yarn tension compensating device are mounted.

18. The traveling yarn tension compensating system according to claim 1 characterized further in that said yarn tension compensating device includes an inclined yarn deflecting surface disposed above said yarn engaging surface for deflecting away from said yarn tension compensating device yarn contacting said yarn guiding element before being guided by said one yarn guiding device.

19. The traveling yarn tension compensating system according to claim 10 characterized further by an inclined yarn deflecting surface formed on said slide element above said yarn engaging surface to deflect yarn away from said yarn tension compensating device yarn contacting said slide element before being guided by said one yarn guiding device.